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<120> RANBP2 AS MODIFIER OF THE PTEN/IGF PATHWAY AND METHODS OF USE

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<151> 2003-05-14

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ttctttggca tacaatgaag aattattacc ggatcctaata gagaagagac caggttttta	3240
aagtgtgtgc aaaccacgtt attactaaaa caatggaatt aaagccctta aatgtttcaa	3300
ataatgcttt agtttggact gcctcagatt atgctgatgg agaagcaaaa gtagaacagc	3360
ttgcagtgaag atttaaaact aaagaagtag ctgattgttt caagaaaaca tttgaagaat	3420
gtcagcagaa tttaatgaaa ctccagaaag gacatgtatc actggcagca gaattatcaa	3480
aggagaccaa tcctgtggtg ttttttgatg tttgtgcgga cggatgaacct ctagggcgga	3540
taactatgga attattttca aacattgttc ctcggaactgc tgagaacttc agagcactat	3600
gcactggaga gaaaggcttt ggtttcaaga attccatttt tcacagagta attccagatt	3660

```

ttgtttgccaggaggagat atcaccaaac atgatggaac aggcggacag tccatztatg 3720
gagacaaatt tgaagatgaa aattttgatg tgaacatac tggtcctggt ttactatcca 3780
tggccaatca aggccagaat accaataatt ctcaatttgt tataaactg aagaaagcag 3840
aacatttgga ctttaagcat gtagtatattg ggtttgtaa ggatggcatg gatactgtga 3900
aaaagattga atcatttggt tctcccaaag ggtctgtttg tcgaagaata actatcacag 3960
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gattgaagct tagctattac aatttgatag ttatgttcag cttttgaaaa tggacgtttc 4080
cgatttaca atgtaaaatt gcagcttata gctgttgta ctttttaatg tgttataatt 4140
gaccttgcat ggtgtgaaat aaaagttaa aactgggtg aaaaaaaaaa aaaaaaaaaa 4200
aaaaaaaaa 4208

```

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<210> 5
<211> 2146
<212> DNA
<213> Homo sapiens

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<400> 5
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gcatcccctc atcgttggcc cacagagaat tatggaccag actcagtgcc tgatggatat 120
caggggtcac agacatttca tggggctcca ctaacagttg caactactgg cccttcagta 180
tattatagtc agtcaccagc atataattcc cagtatcttc tcagaccagc agctaattgt 240
actcccacaa agggcccagt ctatggcatg aataggcttc caccacaaca gcatatttat 300
gcctatccgc aacagatgca cacaccgcca gtgcaaagct catctgcttg tatgttctct 360
caggagatgt atggctctcc tgcattgctt tttgagtctc ctgcaacggg aattctatcg 420
cccaggggtg atgattactt taattacaat gttcaacaga caagcacaaa tccaccttg 480
ccagaaccag gatatttcac aaaacctccg attgcagctc atgcttcaag acctgcagaa 540
tctaagacta tagaatttgg gaaaactaat tttgttcagc ccatgccggg tgaaggatta 600
aggccatctt tgccaacaca agcacacaca acacagccaa ctctttttaa atttaactca 660
aatttcaaat caaatgatgg tgacttcacg ttttctcac cacaggttgt gacacagccc 720
cctcctgcag cttacagtaa cagtgaagc cttttaggtc tctgacttc agataaaccc 780
ttgcaaggag atggctatag tggagccaaa ccaattcctg gtggtcaaac cattgggcct 840
cgaaatacat tcaattttgg aagcaaaaat gtgtctggaa tttcatttac agaaaacatg 900
gggtcgagtc agcaaaagaa ttctggtttt cggcgaagtg atgatatgtt tactttccat 960
ggtccagga aatcagtatt tggaacaccc actttagaga cagcaacaa gaatcatgag 1020
acagatggag gaagtgccca tggggatgat gatgatgacg gtcctcactt tgagcctgta 1080

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gtacctcttc ctgataagat tgaagtaaaa actggtgagg aagatgaaga agaattcttt 1140
tgcaaccgcg cgaaattggt tcgtttcgat gtagaatcca aagaatggaa agaacgtggg 1200
attggcaatg taaaaatact gaggcataaa acatctggta aaattcgct tctaattgaga 1260
cgagagcaag tattgaaaat ctgtgcaaat cattacatca gtccagatat gaaattgaca 1320
ccaaatgctg gatcagacag atcttttgta tggcatgccc ttgattatgc agatgagttg 1380
ccaaaaccag aacaacttgc tattagggttc aaaactcctg aggaagcagc actttttaa 1440
tgcaagtttg aagaagccca gagcatttta aaagcccag gaacaaatgt agccatggcg 1500
tcaaattagg ctgtcagaat tgtaaaagaa cccacaagtc atgataacaa ggatatttgc 1560
aaatctgatg ctggaaacct gaattttgaa tttcagggtg caaagaaaga agggctcttg 1620
tggcattgta acagctgctc attaaagaat gcttcaactg ctaagaaatg tgtatcatgc 1680
caaaatctaa acccaagcaa taaagagctc gttggccac cattagctga aactgttttt 1740
actcctaaaa ccagcccaga gaatgttcaa gatcgatttg cattggtgac tccaaagaaa 1800
gaaggctact gggattgtag tatttgttta gtaagaaatg aacctactgt atctagggtgc 1860
attgctgtgc agaatacaaa atctgctaac aaaagcggat cttcatttgt tcatcaagct 1920
tcatttaaat ttggccaggg agatcttcct aaacctatta acagtgattt cagatctgtt 1980
ttttctacaa aggaaggaca gtgggattgc agtgcatgtt tgggtacaaa tgaggggagc 2040
tctacaaaat gtgctgcttg tcagaatccg agaaaacaga gtctacctgc acgacaacac 2100
ataaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaa 2146

```

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<210> 6
<211> 1026
<212> DNA
<213> Homo sapiens

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<400> 6
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tgcttctcca ttggcaagta gccctgtgag aaaaaatctt ttccgttttg gtgagtcaac 180
aacaggattt aacttcagtt ttaaactctgc tttgagtcca tctaagtctc ctgccaaagt 240
gaatcagagt gggacttcag ttggcactga tgaagaatct gatgttactc aagaagaaga 300
gagagatgga cagtactttg aacctgttgt tcctttacct gatctagttg aagtatccag 360
tggtgaggaa aatgaacaag ttgttttttag tcacagggca aaactctaca gatatgataa 420
agatgttggt caatggaaag aaaggggcat tgggtgatata aagattttac agaattatga 480
taataagcaa gttcgtatag tgatgagaag ggaccaagta taaaacttt gtgccaatca 540

```

```

cagaataact ccagacatga ctttgcaaaa tatgaaaggg acagaaagag tatgggttg 600
gactgcatgt gattttgcag atggagaaaag aaaagtagag catttagctg ttcgttttaa 660
actacaggat gttgcagact cgtttaagaa aatttgtgat gaagcaaaaa cagcccagga 720
aaaagattct ttgataacac ctcatgtttc tcgggtcaagc actcccagag agtcaccatg 780
tggaacaaatt gctgtagctg tattagaaga acccacaaga gagaggacag atgttattca 840
gggtgatgat gtagcagatg caacttcaga agttgaagtg tctagcacat ctgaaacaac 900
acaaaaagca gtgggtttctc ctccaaagtt tgtatttggc tcagagtctg ttaaaagcat 960
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gtgtgg 1026

```

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<210> 7
<211> 3224
<212> PRT
<213> Homo sapiens

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<400> 7

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Met Arg Arg Ser Lys Ala Asp Val Glu Arg Tyr Ile Ala Ser Val Gln
1          5          10          15

```

```

Gly Ser Thr Pro Ser Pro Arg Gln Lys Ser Met Lys Gly Phe Tyr Phe
          20          25          30

```

```

Ala Lys Leu Tyr Tyr Glu Ala Lys Glu Tyr Asp Leu Ala Lys Lys Tyr
          35          40          45

```

```

Ile Cys Thr Tyr Ile Asn Val Gln Glu Arg Asp Pro Lys Ala His Arg
          50          55          60

```

```

Phe Leu Gly Leu Leu Tyr Glu Leu Glu Glu Asn Thr Asp Lys Ala Val
65          70          75          80

```

```

Glu Cys Tyr Arg Arg Ser Val Glu Leu Asn Pro Thr Gln Lys Asp Leu
          85          90          95

```

```

Val Leu Lys Ile Ala Glu Leu Leu Cys Lys Asn Asp Val Thr Asp Gly
          100          105          110

```

```

Arg Ala Lys Tyr Trp Leu Glu Arg Ala Ala Lys Leu Phe Pro Gly Ser
          115          120          125

```

```

Pro Ala Ile Tyr Lys Leu Lys Glu Gln Leu Leu Asp Cys Glu Gly Glu
          130          135          140

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Asp Gly Trp Asn Lys Leu Phe Asp Leu Ile Gln Ser Glu Leu Tyr Val
 145 150 155 160
 Arg Pro Asp Asp Val His Val Asn Ile Arg Leu Val Glu Val Tyr Arg
 165 170 175
 Ser Thr Lys Arg Leu Lys Asp Ala Val Ala His Cys His Glu Ala Glu
 180 185 190
 Arg Asn Ile Ala Leu Arg Ser Ser Leu Glu Trp Asn Ser Cys Val Val
 195 200 205
 Gln Thr Leu Lys Glu Tyr Leu Glu Ser Leu Gln Cys Leu Glu Ser Asp
 210 215 220
 Lys Ser Asp Trp Arg Ala Thr Asn Thr Asp Leu Leu Leu Ala Tyr Ala
 225 230 235 240
 Asn Leu Met Leu Leu Thr Leu Ser Thr Arg Asp Val Gln Glu Ser Arg
 245 250 255
 Glu Leu Leu Gln Ser Phe Asp Ser Ala Leu Gln Ser Val Lys Ser Leu
 260 265 270
 Gly Gly Asn Asp Glu Leu Ser Ala Thr Phe Leu Glu Met Lys Gly His
 275 280 285
 Phe Tyr Met His Ala Gly Ser Leu Leu Leu Lys Met Gly Gln His Ser
 290 295 300
 Ser Asn Val Gln Trp Arg Ala Leu Ser Glu Leu Ala Ala Leu Cys Tyr
 305 310 315 320
 Leu Ile Ala Phe Gln Val Pro Arg Pro Lys Ile Lys Leu Ile Lys Gly
 325 330 335
 Glu Ala Gly Gln Asn Leu Leu Glu Met Met Ala Cys Asp Arg Leu Ser
 340 345 350
 Gln Ser Gly His Met Leu Leu Asn Leu Ser Arg Gly Lys Gln Asp Phe
 355 360 365
 Leu Lys Glu Ile Val Glu Thr Phe Ala Asn Lys Ser Gly Gln Ser Ala
 370 375 380
 Leu Tyr Asp Ala Leu Phe Ser Ser Gln Ser Pro Lys Asp Thr Ser Phe
 385 390 395 400

Leu Gly Ser Asp Asp Ile Gly Asn Ile Asp Val Arg Glu Pro Glu Leu
 405 410 415

Glu Asp Leu Thr Arg Tyr Asp Val Gly Ala Ile Arg Ala His Asn Gly
 420 425 430

Ser Leu Gln His Leu Thr Trp Leu Gly Leu Gln Trp Asn Ser Leu Pro
 435 440 445

Ala Leu Pro Gly Ile Arg Lys Trp Leu Lys Gln Leu Phe His His Leu
 450 455 460

Pro His Glu Thr Ser Arg Leu Glu Thr Asn Ala Pro Glu Ser Ile Cys
 465 470 475 480

Ile Leu Asp Leu Glu Val Phe Leu Leu Gly Val Val Tyr Thr Ser His
 485 490 495

Leu Gln Leu Lys Glu Lys Cys Asn Ser His His Ser Ser Tyr Gln Pro
 500 505 510

Leu Cys Leu Pro Leu Pro Val Cys Lys Gln Leu Cys Thr Glu Arg Gln
 515 520 525

Lys Ser Trp Trp Asp Ala Val Cys Thr Leu Ile His Arg Lys Ala Val
 530 535 540

Pro Gly Asn Val Ala Lys Leu Arg Leu Leu Val Gln His Glu Ile Asn
 545 550 555 560

Thr Leu Arg Ala Gln Glu Lys His Gly Leu Gln Pro Ala Leu Leu Val
 565 570 575

His Trp Ala Glu Cys Leu Gln Lys Thr Gly Ser Gly Leu Asn Ser Phe
 580 585 590

Tyr Asp Gln Arg Glu Tyr Ile Gly Arg Ser Val His Tyr Trp Lys Lys
 595 600 605

Val Leu Pro Leu Leu Lys Ile Ile Lys Lys Lys Asn Ser Ile Pro Glu
 610 615 620

Pro Ile Asp Pro Leu Phe Lys His Phe His Ser Val Asp Ile Gln Ala
 625 630 635 640

Ser Glu Ile Val Glu Tyr Glu Glu Asp Ala His Ile Thr Phe Ala Ile
645 650 655

Leu Asp Ala Val Asn Gly Asn Ile Glu Asp Ala Val Thr Ala Phe Glu
660 665 670

Ser Ile Lys Ser Val Val Ser Tyr Trp Asn Leu Ala Leu Ile Phe His
675 680 685

Arg Lys Ala Glu Asp Ile Glu Asn Asp Ala Leu Ser Pro Glu Glu Gln
690 695 700

Glu Glu Cys Lys Asn Tyr Leu Arg Lys Thr Arg Asp Tyr Leu Ile Lys
705 710 715 720

Ile Ile Asp Asp Ser Asp Ser Asn Leu Ser Val Val Lys Lys Leu Pro
725 730 735

Val Pro Leu Glu Ser Val Lys Glu Met Leu Asn Ser Val Met Gln Glu
740 745 750

Leu Glu Asp Tyr Ser Glu Gly Gly Pro Leu Tyr Lys Asn Gly Ser Leu
755 760 765

Arg Asn Ala Asp Ser Glu Ile Lys His Ser Thr Pro Ser Pro Thr Lys
770 775 780

Tyr Ser Leu Ser Pro Ser Lys Ser Tyr Lys Tyr Ser Pro Lys Thr Pro
785 790 795 800

Pro Arg Trp Ala Glu Asp Gln Asn Ser Leu Leu Lys Met Ile Cys Gln
805 810 815

Gln Val Glu Ala Ile Lys Lys Glu Met Gln Glu Leu Lys Leu Asn Ser
820 825 830

Ser Asn Ser Ala Ser Pro His Arg Trp Pro Thr Glu Asn Tyr Gly Pro
835 840 845

Asp Ser Val Pro Asp Gly Tyr Gln Gly Ser Gln Thr Phe His Gly Ala
850 855 860

Pro Leu Thr Val Ala Thr Thr Gly Pro Ser Val Tyr Tyr Ser Gln Ser
865 870 875 880

Pro Ala Tyr Asn Ser Gln Tyr Leu Leu Arg Pro Ala Ala Asn Val Thr
885 890 895

Pro Thr Lys Gly Pro Val Tyr Gly Met Asn Arg Leu Pro Pro Gln Gln
 900 905 910

His Ile Tyr Ala Tyr Pro Gln Gln Met His Thr Pro Pro Val Gln Ser
 915 920 925

Ser Ser Ala Cys Met Phe Ser Gln Glu Met Tyr Gly Pro Pro Ala Leu
 930 935 940

Arg Phe Glu Ser Pro Ala Thr Gly Ile Leu Ser Pro Arg Gly Asp Asp
 945 950 955 960

Tyr Phe Asn Tyr Asn Val Gln Gln Thr Ser Thr Asn Pro Pro Leu Pro
 965 970 975

Glu Pro Gly Tyr Phe Thr Lys Pro Pro Ile Ala Ala His Ala Ser Arg
 980 985 990

Ser Ala Glu Ser Lys Thr Ile Glu Phe Gly Lys Thr Asn Phe Val Gln
 995 1000 1005

Pro Met Pro Gly Glu Gly Leu Arg Pro Ser Leu Pro Thr Gln Ala
 1010 1015 1020

His Thr Thr Gln Pro Thr Pro Phe Lys Phe Asn Ser Asn Phe Lys
 1025 1030 1035

Ser Asn Asp Gly Asp Phe Thr Phe Ser Ser Pro Gln Val Val Thr
 1040 1045 1050

Gln Pro Pro Pro Ala Ala Tyr Ser Asn Ser Glu Ser Leu Leu Gly
 1055 1060 1065

Leu Leu Thr Ser Asp Lys Pro Leu Gln Gly Asp Gly Tyr Ser Gly
 1070 1075 1080

Ala Lys Pro Ile Pro Gly Gly Gln Thr Ile Gly Pro Arg Asn Thr
 1085 1090 1095

Phe Asn Phe Gly Ser Lys Asn Val Ser Gly Ile Ser Phe Thr Glu
 1100 1105 1110

Asn Met Gly Ser Ser Gln Gln Lys Asn Ser Gly Phe Arg Arg Ser
 1115 1120 1125

Asp Asp	Met Phe Thr Phe His	Gly Pro Gly Lys Ser	Val Phe Gly
1130	1135	1140	
Thr Pro	Thr Leu Glu Thr Ala	Asn Lys Asn His Glu	Thr Asp Gly
1145	1150	1155	
Gly Ser	Ala His Gly Asp Asp	Asp Asp Asp Gly Pro	His Phe Glu
1160	1165	1170	
Pro Val	Val Pro Leu Pro Asp	Lys Ile Glu Val Lys	Thr Gly Glu
1175	1180	1185	
Glu Asp	Glu Glu Glu Phe Phe	Cys Asn Arg Ala Lys	Leu Phe Arg
1190	1195	1200	
Phe Asp	Val Glu Ser Lys Glu	Trp Lys Glu Arg Gly	Ile Gly Asn
1205	1210	1215	
Val Lys	Ile Leu Arg His Lys	Thr Ser Gly Lys Ile	Arg Leu Leu
1220	1225	1230	
Met Arg	Arg Glu Gln Val Leu	Lys Ile Cys Ala Asn	His Tyr Ile
1235	1240	1245	
Ser Pro	Asp Met Lys Leu Thr	Pro Asn Ala Gly Ser	Asp Arg Ser
1250	1255	1260	
Phe Val	Trp His Ala Leu Asp	Tyr Ala Asp Glu Leu	Pro Lys Pro
1265	1270	1275	
Glu Gln	Leu Ala Ile Arg Phe	Lys Thr Pro Glu Glu	Ala Ala Leu
1280	1285	1290	
Phe Lys	Cys Lys Phe Glu Glu	Ala Gln Ser Ile Leu	Lys Ala Pro
1295	1300	1305	
Gly Thr	Asn Val Ala Met Ala	Ser Asn Gln Ala Val	Arg Ile Val
1310	1315	1320	
Lys Glu	Pro Thr Ser His Asp	Asn Lys Asp Ile Cys	Lys Ser Asp
1325	1330	1335	
Ala Gly	Asn Leu Asn Phe Glu	Phe Gln Val Ala Lys	Lys Glu Gly
1340	1345	1350	
Ser Trp	Trp His Cys Asn Ser	Cys Ser Leu Lys Asn	Ala Ser Thr
1355	1360	1365	

Ala Lys	Lys Cys Val Ser Cys	Gln Asn Leu Asn Pro	Ser Asn Lys
1370	1375	1380	
Glu Leu	Val Gly Pro Pro Leu	Ala Glu Thr Val Phe	Thr Pro Lys
1385	1390	1395	
Thr Ser	Pro Glu Asn Val Gln	Asp Arg Phe Ala Leu	Val Thr Pro
1400	1405	1410	
Lys Lys	Glu Gly His Trp Asp	Cys Ser Ile Cys Leu	Val Arg Asn
1415	1420	1425	
Glu Pro	Thr Val Ser Arg Cys	Ile Ala Cys Gln Asn	Thr Lys Ser
1430	1435	1440	
Ala Asn	Lys Ser Gly Ser Ser	Phe Val His Gln Ala	Ser Phe Lys
1445	1450	1455	
Phe Gly	Gln Gly Asp Leu Pro	Lys Pro Ile Asn Ser	Asp Phe Arg
1460	1465	1470	
Ser Val	Phe Ser Thr Lys Glu	Gly Gln Trp Asp Cys	Ser Ala Cys
1475	1480	1485	
Leu Val	Gln Asn Glu Gly Ser	Ser Thr Lys Cys Ala	Ala Cys Gln
1490	1495	1500	
Asn Pro	Arg Lys Gln Ser Leu	Pro Ala Thr Ser Ile	Pro Thr Pro
1505	1510	1515	
Ala Ser	Phe Lys Phe Gly Thr	Ser Glu Thr Ser Lys	Thr Leu Lys
1520	1525	1530	
Ser Gly	Phe Glu Asp Met Phe	Ala Lys Lys Glu Gly	Gln Trp Asp
1535	1540	1545	
Cys Ser	Ser Cys Leu Val Arg	Asn Glu Ala Asn Ala	Thr Arg Cys
1550	1555	1560	
Val Ala	Cys Gln Asn Pro Asp	Lys Pro Ser Pro Ser	Thr Ser Val
1565	1570	1575	
Pro Ala	Pro Ala Ser Phe Lys	Phe Gly Thr Ser Glu	Thr Ser Lys
1580	1585	1590	

Ala	Pro	Lys	Ser	Gly	Phe	Glu	Gly	Met	Phe	Thr	Lys	Lys	Glu	Gly
1595						1600					1605			
Gln	Trp	Asp	Cys	Ser	Val	Cys	Leu	Val	Arg	Asn	Glu	Ala	Ser	Ala
1610						1615					1620			
Thr	Lys	Cys	Ile	Ala	Cys	Gln	Asn	Pro	Gly	Lys	Gln	Asn	Gln	Thr
1625						1630					1635			
Thr	Ser	Ala	Val	Ser	Thr	Pro	Ala	Ser	Ser	Glu	Thr	Ser	Lys	Ala
1640						1645					1650			
Pro	Lys	Ser	Gly	Phe	Glu	Gly	Met	Phe	Thr	Lys	Lys	Glu	Gly	Gln
1655						1660					1665			
Trp	Asp	Cys	Ser	Val	Cys	Leu	Val	Arg	Asn	Glu	Ala	Ser	Ala	Thr
1670						1675					1680			
Lys	Cys	Ile	Ala	Cys	Gln	Asn	Pro	Gly	Lys	Gln	Asn	Gln	Thr	Thr
1685						1690					1695			
Ser	Ala	Val	Ser	Thr	Pro	Ala	Ser	Ser	Glu	Thr	Ser	Lys	Ala	Pro
1700						1705					1710			
Lys	Ser	Gly	Phe	Glu	Gly	Met	Phe	Thr	Lys	Lys	Glu	Gly	Gln	Trp
1715						1720					1725			
Asp	Cys	Ser	Val	Cys	Leu	Val	Arg	Asn	Glu	Ala	Ser	Ala	Thr	Lys
1730						1735					1740			
Cys	Ile	Ala	Cys	Gln	Cys	Pro	Ser	Lys	Gln	Asn	Gln	Thr	Thr	Ala
1745						1750					1755			
Ile	Ser	Thr	Pro	Ala	Ser	Ser	Glu	Ile	Ser	Lys	Ala	Pro	Lys	Ser
1760						1765					1770			
Gly	Phe	Glu	Gly	Met	Phe	Ile	Arg	Lys	Gly	Gln	Trp	Asp	Cys	Ser
1775						1780					1785			
Val	Cys	Cys	Val	Gln	Asn	Glu	Ser	Ser	Ser	Leu	Lys	Cys	Val	Ala
1790						1795					1800			
Cys	Asp	Ala	Ser	Lys	Pro	Thr	His	Lys	Pro	Ile	Ala	Glu	Ala	Pro
1805						1810					1815			
Ser	Ala	Phe	Thr	Leu	Gly	Ser	Glu	Met	Lys	Leu	His	Asp	Ser	Ser
1820						1825					1830			

Gly	Ser	Gln	Val	Gly	Thr	Gly	Phe	Lys	Ser	Asn	Phe	Ser	Glu	Lys
1835						1840					1845			
Ala	Ser	Lys	Phe	Gly	Asn	Thr	Glu	Gln	Gly	Phe	Lys	Phe	Gly	His
1850						1855					1860			
Val	Asp	Gln	Glu	Asn	Ser	Pro	Ser	Phe	Met	Phe	Gln	Gly	Ser	Ser
1865						1870					1875			
Asn	Thr	Glu	Phe	Lys	Ser	Thr	Lys	Glu	Gly	Phe	Ser	Ile	Pro	Val
1880						1885					1890			
Ser	Ala	Asp	Gly	Phe	Lys	Phe	Gly	Ile	Ser	Glu	Pro	Gly	Asn	Gln
1895						1900					1905			
Glu	Lys	Lys	Ser	Glu	Lys	Pro	Leu	Glu	Asn	Gly	Thr	Gly	Phe	Gln
1910						1915					1920			
Ala	Gln	Asp	Ile	Ser	Gly	Gln	Lys	Asn	Gly	Arg	Gly	Val	Ile	Phe
1925						1930					1935			
Gly	Gln	Thr	Ser	Ser	Thr	Phe	Thr	Phe	Ala	Asp	Leu	Ala	Lys	Ser
1940						1945					1950			
Thr	Ser	Gly	Glu	Gly	Phe	Gln	Phe	Gly	Lys	Lys	Asp	Pro	Asn	Phe
1955						1960					1965			
Lys	Gly	Phe	Ser	Gly	Ala	Gly	Glu	Lys	Leu	Phe	Ser	Ser	Gln	Tyr
1970						1975					1980			
Gly	Lys	Met	Ala	Asn	Lys	Ala	Asn	Thr	Ser	Gly	Asp	Phe	Glu	Lys
1985						1990					1995			
Asp	Asp	Asp	Ala	Tyr	Lys	Thr	Glu	Asp	Ser	Asp	Asp	Ile	His	Phe
2000						2005					2010			
Glu	Pro	Val	Val	Gln	Met	Pro	Glu	Lys	Val	Glu	Leu	Val	Thr	Gly
2015						2020					2025			
Glu	Glu	Asp	Glu	Lys	Val	Leu	Tyr	Ser	Gln	Arg	Val	Lys	Leu	Phe
2030						2035					2040			
Arg	Phe	Asp	Ala	Glu	Val	Ser	Gln	Trp	Lys	Glu	Arg	Gly	Leu	Gly
2045						2050					2055			

Asn Leu Lys Ile Leu Lys Asn Glu Val Asn Gly Lys Leu Arg Met 2060 2065 2070
Leu Met Arg Arg Glu Gln Val Leu Lys Val Cys Ala Asn His Trp 2075 2080 2085
Ile Thr Thr Thr Met Asn Leu Lys Pro Leu Ser Gly Ser Asp Arg 2090 2095 2100
Ala Trp Met Trp Leu Ala Ser Asp Phe Ser Asp Gly Asp Ala Lys 2105 2110 2115
Leu Glu Gln Leu Ala Ala Lys Phe Lys Thr Pro Glu Leu Ala Glu 2120 2125 2130
Glu Phe Lys Gln Lys Phe Glu Glu Cys Gln Arg Leu Leu Leu Asp 2135 2140 2145
Ile Pro Leu Gln Thr Pro His Lys Leu Val Asp Thr Gly Arg Ala 2150 2155 2160
Ala Lys Leu Ile Gln Arg Ala Glu Glu Met Lys Ser Gly Leu Lys 2165 2170 2175
Asp Phe Lys Thr Phe Leu Thr Asn Asp Gln Thr Lys Val Thr Glu 2180 2185 2190
Glu Glu Asn Lys Gly Ser Gly Thr Gly Ala Ala Gly Ala Ser Asp 2195 2200 2205
Thr Thr Ile Lys Pro Asn Pro Glu Asn Thr Gly Pro Thr Leu Glu 2210 2215 2220
Trp Asp Asn Tyr Asp Leu Arg Glu Asp Ala Leu Asp Asp Ser Val 2225 2230 2235
Ser Ser Ser Ser Val His Ala Ser Pro Leu Ala Ser Ser Pro Val 2240 2245 2250
Arg Lys Asn Leu Phe Arg Phe Gly Glu Ser Thr Thr Gly Phe Asn 2255 2260 2265
Phe Ser Phe Lys Ser Ala Leu Ser Pro Ser Lys Ser Pro Ala Lys 2270 2275 2280
Leu Asn Gln Ser Gly Thr Ser Val Gly Thr Asp Glu Glu Ser Asp 2285 2290 2295

Val Thr	Gln Glu Glu Glu Arg	Asp Gly Gln Tyr Phe	Glu Pro Val
2300	2305	2310	
Val Pro	Leu Pro Asp Leu Val	Glu Val Ser Ser Gly	Glu Glu Asn
2315	2320	2325	
Glu Gln	Val Val Phe Ser His	Arg Ala Lys Leu Tyr	Arg Tyr Asp
2330	2335	2340	
Lys Asp	Val Gly Gln Trp Lys	Glu Arg Gly Ile Gly	Asp Ile Lys
2345	2350	2355	
Ile Leu	Gln Asn Tyr Asp Asn	Lys Gln Val Arg Ile	Val Met Arg
2360	2365	2370	
Arg Asp	Gln Val Leu Lys Leu	Cys Ala Asn His Arg	Ile Thr Pro
2375	2380	2385	
Asp Met	Thr Leu Gln Asn Met	Lys Gly Thr Glu Arg	Val Trp Leu
2390	2395	2400	
Trp Thr	Ala Cys Asp Phe Ala	Asp Gly Glu Arg Lys	Val Glu His
2405	2410	2415	
Leu Ala	Val Arg Phe Lys Leu	Gln Asp Val Ala Asp	Ser Phe Lys
2420	2425	2430	
Lys Ile	Phe Asp Glu Ala Lys	Thr Ala Gln Glu Lys	Asp Ser Leu
2435	2440	2445	
Ile Thr	Pro His Val Ser Arg	Ser Ser Thr Pro Arg	Glu Ser Pro
2450	2455	2460	
Cys Gly	Lys Ile Ala Val Ala	Val Leu Glu Glu Thr	Thr Arg Glu
2465	2470	2475	
Arg Thr	Asp Val Ile Gln Gly	Asp Asp Val Ala Asp	Ala Thr Ser
2480	2485	2490	
Glu Val	Glu Val Ser Ser Thr	Ser Glu Thr Thr Pro	Lys Ala Val
2495	2500	2505	
Val Ser	Pro Pro Lys Phe Val	Phe Gly Ser Glu Ser	Val Lys Ser
2510	2515	2520	

Ile	Phe	Ser	Ser	Glu	Lys	Ser	Lys	Pro	Phe	Ala	Phe	Gly	Asn	Ser
2525						2530					2535			
Ser	Ala	Thr	Gly	Ser	Leu	Phe	Gly	Phe	Ser	Phe	Asn	Ala	Pro	Leu
2540						2545					2550			
Lys	Ser	Asn	Asn	Ser	Glu	Thr	Ser	Ser	Val	Ala	Gln	Ser	Gly	Ser
2555						2560					2565			
Glu	Ser	Lys	Val	Glu	Pro	Lys	Lys	Cys	Glu	Leu	Ser	Lys	Asn	Ser
2570						2575					2580			
Asp	Ile	Glu	Gln	Ser	Ser	Asp	Ser	Lys	Val	Lys	Asn	Leu	Phe	Ala
2585						2590					2595			
Ser	Phe	Pro	Thr	Glu	Glu	Ser	Ser	Ile	Asn	Tyr	Thr	Phe	Lys	Thr
2600						2605					2610			
Pro	Glu	Lys	Ala	Lys	Glu	Lys	Lys	Lys	Pro	Glu	Asp	Ser	Pro	Ser
2615						2620					2625			
Asp	Asp	Asp	Val	Leu	Ile	Val	Tyr	Glu	Leu	Thr	Pro	Thr	Ala	Glu
2630						2635					2640			
Gln	Lys	Ala	Leu	Ala	Thr	Lys	Leu	Lys	Leu	Pro	Pro	Thr	Phe	Phe
2645						2650					2655			
Cys	Tyr	Lys	Asn	Arg	Pro	Asp	Tyr	Val	Ser	Glu	Glu	Glu	Glu	Asp
2660						2665					2670			
Asp	Glu	Asp	Phe	Glu	Thr	Ala	Val	Lys	Lys	Leu	Asn	Gly	Lys	Leu
2675						2680					2685			
Tyr	Leu	Asp	Gly	Ser	Glu	Lys	Cys	Arg	Pro	Leu	Glu	Glu	Asn	Thr
2690						2695					2700			
Ala	Asp	Asn	Glu	Lys	Glu	Cys	Ile	Ile	Val	Trp	Glu	Lys	Lys	Pro
2705						2710					2715			
Thr	Val	Glu	Glu	Lys	Ala	Lys	Ala	Asp	Thr	Leu	Lys	Leu	Pro	Pro
2720						2725					2730			
Thr	Phe	Phe	Cys	Gly	Val	Cys	Ser	Asp	Thr	Asp	Glu	Asp	Asn	Gly
2735						2740					2745			
Asn	Gly	Glu	Asp	Phe	Gln	Ser	Glu	Leu	Gln	Lys	Val	Gln	Glu	Ala
2750						2755					2760			

Gln	Lys	Ser	Gln	Thr	Glu	Glu	Ile	Thr	Ser	Thr	Thr	Asp	Ser	Val
	2765					2770					2775			
Tyr	Thr	Gly	Gly	Thr	Glu	Val	Met	Val	Pro	Ser	Phe	Cys	Lys	Ser
	2780					2785					2790			
Glu	Glu	Pro	Asp	Ser	Ile	Thr	Lys	Ser	Ile	Ser	Ser	Pro	Ser	Val
	2795					2800					2805			
Ser	Ser	Glu	Thr	Met	Asp	Lys	Pro	Val	Asp	Leu	Ser	Thr	Arg	Lys
	2810					2815					2820			
Glu	Ile	Asp	Thr	Asp	Ser	Thr	Ser	Gln	Gly	Glu	Ser	Lys	Ile	Val
	2825					2830					2835			
Ser	Phe	Gly	Phe	Gly	Ser	Ser	Thr	Gly	Leu	Ser	Phe	Ala	Asp	Leu
	2840					2845					2850			
Ala	Ser	Ser	Asn	Ser	Gly	Asp	Phe	Ala	Phe	Gly	Ser	Lys	Asp	Lys
	2855					2860					2865			
Asn	Phe	Gln	Trp	Ala	Asn	Thr	Gly	Ala	Ala	Val	Phe	Gly	Thr	Gln
	2870					2875					2880			
Ser	Val	Gly	Thr	Gln	Ser	Ala	Gly	Lys	Val	Gly	Glu	Asp	Glu	Asp
	2885					2890					2895			
Gly	Ser	Asp	Glu	Glu	Val	Val	His	Asn	Glu	Asp	Ile	His	Phe	Glu
	2900					2905					2910			
Pro	Ile	Val	Ser	Leu	Pro	Glu	Val	Glu	Val	Lys	Ser	Gly	Glu	Glu
	2915					2920					2925			
Asp	Glu	Glu	Ile	Leu	Phe	Lys	Glu	Arg	Ala	Lys	Leu	Tyr	Arg	Trp
	2930					2935					2940			
Asp	Arg	Asp	Val	Ser	Gln	Trp	Lys	Glu	Arg	Gly	Val	Gly	Asp	Ile
	2945					2950					2955			
Lys	Ile	Leu	Trp	His	Thr	Met	Lys	Asn	Tyr	Tyr	Arg	Ile	Leu	Met
	2960					2965					2970			
Arg	Arg	Asp	Gln	Val	Phe	Lys	Val	Cys	Ala	Asn	His	Val	Ile	Thr
	2975					2980					2985			

Lys Thr Met Glu Leu Lys Pro Leu Asn Val Ser Asn Asn Ala Leu
 2990 2995 3000
 Val Trp Thr Ala Ser Asp Tyr Ala Asp Gly Glu Ala Lys Val Glu
 3005 3010 3015
 Gln Leu Ala Val Arg Phe Lys Thr Lys Glu Val Ala Asp Cys Phe
 3020 3025 3030
 Lys Lys Thr Phe Glu Glu Cys Gln Gln Asn Leu Met Lys Leu Gln
 3035 3040 3045
 Lys Gly His Val Ser Leu Ala Ala Glu Leu Ser Lys Glu Thr Asn
 3050 3055 3060
 Pro Val Val Phe Phe Asp Val Cys Ala Asp Gly Glu Pro Leu Gly
 3065 3070 3075
 Arg Ile Thr Met Glu Leu Phe Ser Asn Ile Val Pro Arg Thr Ala
 3080 3085 3090
 Glu Asn Phe Arg Ala Leu Cys Thr Gly Glu Lys Gly Phe Gly Phe
 3095 3100 3105
 Lys Asn Ser Ile Phe His Arg Val Ile Pro Asp Phe Val Cys Gln
 3110 3115 3120
 Gly Gly Asp Ile Thr Lys His Asp Gly Thr Gly Gly Gln Ser Ile
 3125 3130 3135
 Tyr Gly Asp Lys Phe Glu Asp Glu Asn Phe Asp Val Lys His Thr
 3140 3145 3150
 Gly Pro Gly Leu Leu Ser Met Ala Asn Gln Gly Gln Asn Thr Asn
 3155 3160 3165
 Asn Ser Gln Phe Val Ile Thr Leu Lys Lys Ala Glu His Leu Asp
 3170 3175 3180
 Phe Lys His Val Val Phe Gly Phe Val Lys Asp Gly Met Asp Thr
 3185 3190 3195
 Val Lys Lys Ile Glu Ser Phe Gly Ser Pro Lys Gly Ser Val Cys
 3200 3205 3210
 Arg Arg Ile Thr Ile Thr Glu Cys Gly Gln Ile
 3215 3220